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ABSTRACT

A synthesis of two evaluation studies is presented. The first study describes an early immersion school-based program in the province of British Columbia conducted on a longitudinal basis from kindergarten to grade 7, and sponsored by parents to extend their children's school-based bilingual experience. The longitudinal study of the early immersion program examined the effects of the program on children's performance in English language arts and mathematics, French language skills, and attitudes toward French language and culture. Comparisons were made with students in the regular English program and with those in other types of French second language programs. The second study involves a bilingual exchange program for grade 7 early immersion students which had two aspects: a cultural-lecture component on various aspects of French-Canadian culture given during the year, and a 2-week visit to the province of Quebec during which the early immersion students studied with French speaking students and their families. The evaluation study was designed to investigate the effects of each component of the exchange program on students' knowledge of and their attitudes toward various aspects of French language and culture. (Author/AMH)

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EVALUATION STUDIES OF BILINGUAL PROGRAMS IN CANADA

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Study I: A Longitudinal Study of an Early Immersion Program

Over the past fifteen years, there has been a great deal of experimentation and innovation in educational programs designed for majority English-speaking children to learn French as a second language. This has been prompted by the desire of many Canadians for the improvement and strengthening of French language instruction and has been stimulated by the policies and funding of the Federal Government of Canada for bilingual education. Of the variety of programs which have resulted, immersion appears to be among the most effective for enabling English-speaking children to attain high levels of proficiency in French.

Immersion is very different from the traditional French second language (FSL) approach in which French is taught as a separate subject for about 20-30 minutes per day. An immersion program involves a switch of languages between the home and the school. Initially all or at least a very significant part of the curriculum is taught using the children's second language (French) as the language of instruction. French language instruction (i.e., the explicit teaching of vocabulary and grammatical rules) is not necessarily excluded from the immersion classroom, but the opportunity that immersion provides for children to learn language through its use rather than through explicit instruction is its distinguishing feature (Stern, 1978).

The most well know type of immersion program is early immersion, which begins in kindergarten or grade one with children receiving their first two or three years of schooling with French as the language of instruction. English language instruction (the child's first language) usually is not introduced until grade two or three. With each successive grade, the proportion of time in which English is used is increased, so that by the end of elementary school the curriculum is approximately balanced between English and French instruction.

Early immersion started in 1965 as a pilot-study in one school in the bilingual city of Montreal in the majority French-speaking province of Quebec (cf. Lambert & Tucker, 1972). It has since grown considerably so that it is now an alternative form of schooling in many educational systems across Canada. In the majority English-speaking province of British Columbia, the number of school districts offering early French immersion programs has grown very rapidly from 3 school districts in 1973 to 21 in 1982.

A considerable amount of research has accompanied the development of early immersion programs in Canada (for a recent review of literature, see Genesee, 1983).[1] Comparing the progress of early immersion students to their peers in regular English programs, researchers have repeatedly demonstrated that children reap substantial benefits from the immersion program in terms of their French language development and experience no long-term harmful effects to their cognitive or English language development or achievement in school subjects. Specifically, although immersion children commonly experience lags in English language skills during the primary grades, they overcome these lags soon after English is introduced into the curriculum and catch up with their peers in the regular English program on all aspects of English language arts, usually by grade four.

Investigations of French language development have revealed that immersion children attain much higher levels of proficiency in French than children enrolled in more traditional French second language (FSL) programs (i.e., in which French is taught as a separate subject). As a further reference point, comparisons with native francophone children have revealed that immersion children tend to attain native-like levels in receptive French language skills (reading and listening comprehension), but are less likely to do so in the productive language skills (speaking and writing), where they show many non-native characteristics (e.g., Spilka, 1976; Harley & Swain, 1978). The effectiveness of the early immersion

program has been demonstrated in bilingual regions of Canada (e.g., Montreal: Lambert & Tucker, 1972; Genesee, 1978; Ottawa: Swain & Barik, 1976; Barik & Swain, 1978a; Swain, Lapkin & Andrew, 1981) and more recently in unilingual regions (British Columbia: Shapson & Kaufman, 1978; New Brunswick: Gray, 1980; Toronto: Barik & Swain, 1978b; Andrew, Lapkin & Swain, 1979).

Overview of the Longitudinal Study

The study reported here is a longitudinal evaluation of the early immersion program in Coquitlam School District in the Metropolitan area of Vancouver, British Columbia. Coquitlam was one of three school districts to first introduce an early French immersion program in the predominantly English-speaking province of British Columbia, which is the most westerly Canadian province bordering on the Pacific Ocean.[2] The effects of the immersion experience were monitored through the elementary grades by following the first two cohorts of students who entered the program from grade one (Cohort I) and from kindergarten (Cohort II).

The longitudinal study included an examination of the effects of the program on the children's performance in the following areas:

a) English language arts (grade one through grade 4);

b) French language skills (grade two through grade 4, and grade 6).

During the study, attempts were also made to determine whether there were any effects attributable to the different amounts of instructional time in French received by the two immersion cohorts during kindergarten and grade 2 (80% for Cohort I vs. 100% for Cohort II).[3] The immersion experience of the two cohorts was identical at the other grade levels (see Figure 1).

Methodology

Sample

The sample was composed of the two cohorts of students who entered the immersion program in Coquitlam. Only students who had been tested in the first year and remained in the program were retained in the subsequent analysis for this longitudinal study. The comparison groups were composed of pupils attending the regular English program in the same schools as the immersion children or in schools judged to be similar in socio-economic composition. The immersion and comparison groups did not differ on a measure of general intelligence administered at the beginning of the first year of the study.

Design

The design of the study is illustrated in Table 1. The cognitive abilities measure was administered as a measure of general intelligence in the first year of the study at the beginning of grade 1 for Cohort I and at the end of kindergarten for Cohort II. All other instruments were administered towards the end of the school year in each grade. The measurement instruments are listed in Appendix A.

A quasi-experimental design was employed with pupils in pre-existing classes forming the experimental (immersion) and comparison groups; random assignment of subjects to treatments was not feasible since participation in the immersion program was optional. Comparisons were made between immersion and regular (English) program students on standardized achievement test scores which were adjusted statistically using the first year's cognitive abilities test scores as a covariate. The analyses were carried out separately for the two cohorts in an attempt to validate the findings at each grade with a different group of students.

The performance of each cohort in French language skills was compared to

norms established for francophone children in Montreal. Where possible, pupils enrolled in another less intensive French program in the district (e.g., bilingual or partial immersion program) also served as a reference point for evaluating French language skills.[4]

In order to determine whether there were any effects attributable to the different amounts of instructional time in French received by the two immersion cohorts during the early years, statistical comparisons were made between the performance of the two immersion cohorts on the English language measures at the end of grades 3 and 4 and on the French language measures at the end of grades 3, 4, and 6 (analysis of covariance using the first year's cognitive abilities test scores as a covariate).

Results

Primary Grades (Grades 1-3)

English Language Arts. The results for English Language Arts for both cohorts separately are presented in Table 2. These results can be summarized breifly as follows:

a) At the end of grade 1 and grade 2, both immersion cohorts lagged behind the comparison group children on all subtests of English language skills that were assessed.

b) By the end of grade 3 immersion students had closed this gap in that no significant differences between immersion and English comparison groups were found on measures of word knowledge and reading. The only exception was spelling for Cohort II, in which immersion students still scored significantly lower than their peers in the regular English program, $F(1,65) = 10.3$, $p < .05$.

French Language Arts. The performance of the two immersion cohorts in French Language Arts (percentile equivalent ranges based on the francophone norms)[5] is illustrated in Figure 2. For comparison purposes, the data for students enrolled in an earlier less intensive bilingual program in the school district are also presented.

a) It can be seen that the children in the immersion program made significant progress beyond those in the bilingual group. In terms of the norms for francophone children in Montreal, the grade 2 immersion groups scored between the 40th - 59th percentile (Cohort II), and the 24th - 39th percentile (Cohort I). The grade 2 bilingual group's score was between the 4th - 10th percentile.

b) The grade 3 percentile ranges revealed that children in the two immersion cohorts still performed at a higher level than those in the bilingual group. However, the Cohort II immersion pupils appear to have made the most progress. Their mean score fell between the 60th - 78th percentile.

Comparison of two immersion cohorts. Since their immersion experience had differed with respect to amount of instructional time in French, direct comparisons were made between the two immersion cohorts at the end of grade 3 (analysis of covariance, with first year's cognitive abilities test scores as covariate).

a) No significant differences were found on the three English language subtests: word knowledge $F(1,57) = 0.02$; reading, $F(1,57) = 0.25$; and spelling, $F(1,57) = 0.42$.

b) However, on the measure of French Language Arts (see Table 3), Cohort II scored significantly higher than Cohort I, $F(1,60) = 21.3$, $p < .001$. One might speculate that this difference is partly attributable to more

instructional time in French experienced by Cohort II in kindergarten (100% vs. 80% for Cohort I) and grade 2 (100% vs. 80%).

These results suggested that Cohort II did not suffer any loss to their English language skills and profited in the development of their French language skills from the greater amount of instructional time in French they had experienced over Cohort I in the primary grades.

Intermediate Grades (Grades 4-6)

English Language Arts. The English language results for both cohorts at the end of grade 4 are presented in Table 4. Statistical comparisons indicated that there were no significant differences in mean scores between the immersion and comparison groups on any of the four subtests of the Metropolitan Achievement Test (word knowledge, reading, language, and spelling). Thus, by the end of grade 4, immersion children no longer showed any lags in English language skills, as they had in earlier grades.

French Language Arts. Figure 2 also contains the results for the Test de Rendement en Français (grade 4 and grade 6). At the end of grade 4, both immersion cohorts performed in the 24th - 39th percentile equivalent range when compared to the francophone norms. This was a higher level of performance than that achieved by grade 4 students enrolled in the district's earlier less intensive bilingual program (i.e., the 4th - 10th percentile equivalent range). At the end of grade 6, both immersion cohorts again performed in the 24th - 39th percentile equivalent range.

Comparison of two immersion cohorts. As was the case at the end of grade 3, direct comparisons were made between the two immersion cohorts at the end of grade 4 and grade 6.

a) At the end of grade 4, there were no significant differences (analysis of covariance with first year's cognitive abilities test scores as

covariate) between the performance of the two immersion cohorts in English language arts: word knowledge, $F(1,52) = 0.03$; reading, $F(1,52) = 0.00$; language, $F(1,52) = 0.42$; and spelling, $F(1,52) = 0.00$.

b) On the measure of French language arts (see Table 5), there were no significant difference in the mean scores of the two immersion cohorts at either grade 4, $F(1,35) = 1.67$ or grade 6, $F(1,35) = 3.00$. These findings suggest that the initial advantage which Cohort II had shown in French language arts when the two cohorts were compared at the end of grade 3 was no longer evident in the intermediate grades.

c) However, on the measure of French Comprehension (see Table 5) which was administered at the end of grade 6, the immersion Cohort II scored at a significantly higher level than Cohort I, $F(1,35) = 9.21$, $p < .01$.

Summary and Discussion

The results of this study are consistent with those of many other studies of immersion programs elsewhere in Canada (Genesee, 1978; Gray, 1980; Lambert & Tucker, 1972; Swain, Lapkin & Andrew, 1981), and the evidence suggests that the immersion model is effective with English-speaking students in the province of British Columbia. Despite characteristic initial lags in English language skills in grades 1 and 2, immersion children attained equivalence with their peers in the regular English program on these skills soon after English language arts were introduced into the curriculum in grade 3. Students in the immersion program had higher levels of achievement in French than students enrolled in other types of French programs. Their level of achievement in French language arts in grade 4 (24th - 39th percentile equivalent range) appears to be similar to those reported for some of the immersion programs in more bilingual regions of Canada, e.g., in Ottawa (Stern et al., 1976) and in Montreal (Genesee, 1978).

The direct comparisons between the two cohorts in French revealed a superiority for Cohort II in French comprehension at the end of grade 6, suggesting that this cohort may have derived long-term benefits in this skill from the greater amount of instructional time in French it had experienced over Cohort I in the primary grades. These results are consistent with the research demonstrating a strong relationship between amount of instructional time and achievement in a second language (Swain, 1978; Carroll, 1975). However, in contrast to the findings for French comprehension, the superiority which Cohort II had shown in French language arts at the end of grade 3 was no longer apparent at the end of grade 4 or grade 6.

In recent years, some researchers have suggested that the school context may not be sufficient to sustain and improve fluent bilingual skills. Swain (1981), for example, has suggested that immersion children may need to interact with their French-speaking peers in order for their speaking skills to improve. The fact that English-speaking children who are enrolled in schools for native French-speaking children in Montreal are judged by their teachers to be indistinguishable from native speakers (Macnamara, Svarc, & Horner, 1976) would seem to bear her out. Genesee (1978) has suggested making greater use of the opportunities to use and practice French outside of school in communities where there is a sizeable native French-speaking population. Although one might expect that immersion students in bilingual regions would enjoy an advantage in French language development over those in unilingual regions, a recent study by Swain (1981) provides data suggesting that this may not yet be occurring. Swain compared the French language results from immersion programs in a number of Canadian cities varying widely in the proportion of their population who are native French-speaking and reported no association between the availability of French in the wider environment and immersion students' achievement in French. It is quite possible that if

immersion students in bilingual areas of Canada start capitalizing on the available opportunities, they may come to have an advantage over those programs located in unilingual areas, such as British Columbia.

The high levels of performance of Cohort II in French language arts in the primary grades suggest that a bilingual context may not be important at least for this aspect of French language development in the early years. Whether contextual support is necessary in immersion programs in the later grades or whether the lack of this support can be circumvented by further instructional or extracurricular means remains to be answered.

Study II: A Bilingual Exchange Program for Immersion Students

The Federal Government of Canada has been actively promoting its policy of encouraging students to become bilingual in French and English, the two official languages of Canada. The programs that have evolved have not only encompassed linguistic goals. It is expected that Canadian students will also increase their knowledge and awareness of and develop more positive attitudes toward the second language/cultural group. As a result, a variety of extracurricular programs have been developed to complement and extend school-based language programs; these have ranged from intensive summer language programs to bicultural excursion and exchange programs in which students are given the opportunity for contact with native speakers of the language (e.g., see Cziko & Lambert, 1976; Gardner, Smythe & Brunet, 1977; Shapson, Kaufman, & Day, 1981).

Overview of the Exchange Study

The present study reports on a bilingual exchange program for early immersion students which was initiated and sponsored by parents to extend their children's school-based immersion experience during grade 7. The children in this study

were enrolled in the French early immersion program in the Vancouver School District, British Columbia, and their exchange program was with a group of native French-speaking children from Quebec, the majority French-speaking province of Canada.

The objectives of the exchange program, as stated by the parent's group, were as follows:

a) to enable pupils to learn day-to-day expressions and gain confidence in using the French language in a real-world environment;

b) to give most pupils their first real opportunity to communicate in French, other than with teachers and classmates;

c) to give pupils the opportunity to meet informally and get to know children of their own age who are native speakers of French;

d) to acquaint pupils with the milieu and culture of French Canada and with the basic similarities and subtle differences between French-Canadians and English-Canadians.

e) to awaken in pupils positive thoughts and feelings about their ability to communicate in French and the impact this can have on their future and that of Canada.

The exchange program was intended to be an integral part of the grade 7 curriculum of the Vancouver early immersion program and had two aspects: a) a cultural-lecture component consisting of a series of presentations and classroom activities on various aspects of French-Canadian culture prior to the students' visit to Quebec and b) a twelve-day visit to Quebec in which the Vancouver students were accommodated as guests in the homes of their "twins" and took part in a variety of family and planned socio-cultural activities.

The evaluation study was designed to investigate the effects which the exchange program had on the students in the following areas: knowledge of French-Canadian culture; attitudes toward French-speaking Canadians; attitudes toward English-speaking Canadians and toward bilingualism, motivation to learn French, anxiety about using French, and perceived understanding of French-Canadian culture. The following questions were investigated:

a) What were the effects of the cultural-lecture component on student attitudes and knowledge of French-Canadian culture?

b) What were the effects of the entire exchange program (i.e., cultural-lecture component and trip to Quebec) on student attitudes and knowledge of French-Canadian culture?

Methodology

Sample

Sixty-three (63) students enrolled in the grade 7 early French immersion program in Vancouver who participated in the exchange program were involved in the study. The exchange program was voluntary, and all but four students from the two immersion classes in Vancouver elected to participate.

Measurement Instruments

Student Opinions Questionnaire (see Kaufman, D., Shapson, S., & Day, E., 1981). This questionnaire was originally developed for high school and university students studying French as a second language in summer immersion programs. It was utilized in the present study in a slightly altered format more appropriate for younger students and is comprised of a series of twenty-eight five-point Likert-type items which form six subscales: attitudes toward French-speaking Canadians (8 items); attitudes toward English-speaking Canadians (5 items);

attitudes toward bilingualism (6 items); motivation for learning French (4 items); anxiety about using French (4 items); and perceived understanding of French-Canadian culture (1 item). Reliability coefficients (Cronbach's Alpha) were determined for the present study; and for the total scale they were .81 or higher.

Knowledge of Culture Test (see Kaufman, D., Shapson, S., & Day, E., 1981). This test assesses the student's knowledge of various aspects of French-Canadian and English-Canadian culture by requiring him/her to write in the spaces provided up to three examples of various aspects of these cultures (e.g., poets, political figures, song-writers, etc.). Students are given a maximum of twenty-five minutes to complete this test.

Design

The study utilized a pre/post-test design (see Table 6). All students were pretested before the beginning of the cultural component of the program. In order to determine the effects of the cultural-lecture component and the trip to Quebec, students were randomly divided into two groups for the post-testing. One group (Group A) was post-tested before the trip to Quebec (at the end of the cultural-lecture component), and the other group (Group B) after the trip to Quebec.

Results

The main results of the study are summarized as follows:

1. Effects of the cultural-lecture component. Students tested after the cultural-lecture component but before the trip to Quebec (Group A) demonstrated significant gains from pre to post-test in knowledge of French-Canadian culture but no positive changes on the attitudinal or opinons measures except for a significant increase in attitudes toward English-speaking Canadians (see Table 7).

2. Effects of entire exchange. Students tested after the entire exchange program (cultural-lecture component and the trip to Quebec-- Group B) demonstrated significant gains from the pre to the post-test in knowledge of French-Canadian culture. They also demonstrated significantly more positive attitudes toward French-speaking Canadians than they had in the pre-test. There were no significant changes on any of the other attitude or opinions measures (see Table 8).
3. Comparison of cultural lecture component vs. entire exchange. Statistical comparisons between the pre-test scores of the two groups indicated that there were no significant differences between Group A and Group B on any of the measures at the beginning of the exchange program. When the post-test scores of the two groups were compared (analysis of covariance, adjusting statistically for the pre-test scores), the results indicated that Group B (i.e., post-test after entire exchange) had significantly more positive attitudes toward French-speaking Canadians than Group A (i.e., post-test after cultural-lecture component). They also tended to have higher scores on the Knowledge of French-Canadian Culture Test (although this just failed to reach statistical significance at the .05 level, see Table 9).

Summary and Discussion

In summary, the above results indicate that the cultural-lecture component of the program, in itself, had a significant and beneficial effect on students' knowledge of French-Canadian culture which was maintained by students participating in the trip to Quebec. As well, the trip to Quebec had a further positive effect on students' attitudes toward French-speaking Canadians.

Limitations in budget and time resulted in methodological restrictions in this study: it was not possible to select a comparison group specifically for the study (e.g., a group of early immersion students of the same grade level who did not experience the exchange program would have allowed the authors to control for extraneous variables) or to investigate longer-term effects of the exchange. However, the findings in other studies conducted by the authors suggest that positive changes in knowledge of French-Canadian culture and attitudes toward French-speaking Canadians are not likely to occur if students have not had a special experience to encourage these changes (e.g., see, for example, Shapson, Kaufman, & Day, 1981).

Compared with exchange programs reported elsewhere, the Vancouver exchange program appears to be unique in two aspects: a) the involvement of the parent's organization of the school in sponsoring and organizing the exchange and b) the attempts made to integrate a cutlural-lecture component into the students' curriculum as preparation for the exchange trip. This combination, which involved the parent, the school, and the child in a common venture, appears to have had beneficial results, and offers a promising model for future exchange programs.

Footnotes

[1]Since early immersion programs typically involve majority language speakers who are learning a relatively prestigious language, care must be taken not to generalize the results of this research to minority language children.

[2]According to the 1982 census, the French mother tongue population of British Columbia was only approximately 1.5%.

[3]There are historical reasons for the differences in the initial immersion experience for the two cohorts. Prior to the introduction of the immersion program in 1973, the district had been offering a "Bilingual Program" in which children received 80% instruction in French in kindergarten and 50% French in subsequent grades. Cohort I had taken its kindergarten year in this program before entering the immersion program in grade one. The differences in the amount of instructional time in French at the grade two level occurred because of subsequent changes in the immersion program format delaying the introduction of English language arts until grade 3.

[4]Students in the "Bilingual or Partial Immersion Program" had 80% instruction in French in kindergarten and 50% French in subsequent grades.

[5]These ranges compare the Coquitlam students to francophone students in Montreal. Since the test administration dates and the population of students from which the samples were drawn differ from those in Montreal, the percentile norms should not be used to directly compare the immersion students to francophone students in Montreal.

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Table 2

English Language Skills: Immersion Cohorts vs.
English Comparison Groups (Grade 1, 2 and 3)

Subscales of Metropolitan Achievement Tests	Grade 1 Immersion Group Unadj. Mean	Grade 1 Comparison Group Unadj. Mean	Grade 1 F^a	Grade 2 Immersion Group Unadj. Mean	Grade 2 Comparison Group Unadj. Mean	Grade 2 F^a	Grade 3 Immersion Group Unadj. Mean	Grade 3 Comparison Group Unadj. Mean	Grade 3 F^a
Cohort I			df(1,91)			df(1,77)			df(1,65)
Metro. Achiev. Test									
Word Knowledge (mx=35/40/50)	23.3	29.9	23.7**	26.6	33.5	19.6**	34.4	36.4	1.3
Word Disc./Anal. (mx=35/35/-)	21.0	28.9	35.6**	26.7	31.4	19.2**			
Reading (mx=46/44/45)	17.3	30.8	36.4**	31.7	35.9	6.4*	27.6	28.0	0.5
Spelling (mx=-/30/40)				17.6	26.4	37.1**	26.4	30.0	1.6
Cohort II			df(1,86)			df(1,75)			df(1,65)
Metro. Achiev. Test									
Word Knowledge (mx=35/40/50)	20.6	29.1	38.3**	26.3	34.7	31.6**	32.3	35.7	1.0
Word Analysis (mx=40/35/-)	25.2	35.1	57.0**	24.8	31.5	34.6**			
Reading (mx=42/44/45)	19.2	27.8	20.8**	27.9	36.8	27.8**	26.7	25.3	0.2
Spelling (mx=-/30/40)				12.5	27.8	92.4**	22.7	30.3	10.3*

*$p < .05$ **$p < .001$

[a]Based on Covariate Analysis using the first year's cognitive abilities test scores as covariate.

[b]Maximum score possible on the subtest in grades 1, 2, 3, respectively.

Table 1

Design of Coquitlam Early Immersion Study

Instruments	French Immersion													Comparison Group[a]											
	Cohort I							Cohort II						Cohort I							Cohort II				
	1	2	3	4	5	6	K	1	2	3	4	5	6	1	2	3	4	5	6	K	1	2	3	4	5	6
Cognitive Abilities	X						X							X						X						
English Language Arts	X	X	X	X				X	X	X	X			X	X	X	X				X	X	X	X		
French Language Skills:																										
French Language Arts		X	X	X		X			X	X	X		X													
French Comprehension	X					X	X						X													

[a]Students attending the regular English program in the same schools as the immersion children or in schools judged to be similar in socio-economic composition served as the comparison groups for the measures of cognitive abilities and English language arts. In addition, students enrolled in another less intensive program in the district (e.g., bilingual program) served as a point of reference for comparing the French language measures.

Table 3

Performance in French Language Arts:

Comparisons between Immersion Cohorts (Grade 3)

Cohort I			Cohort II			
n	Unadjusted Mean Score	S.D.	n	Unadjusted Mean Score	S.D.	F-value[a]
22	17.6 (max=35)	3.68	40	22.8 (max=35)	5.58	21.3*

*$p < .001$

[a]Analysis of covariance, using first year's cognitive abilities test scores as covariate.

Table 4

English Language Skills: Immersion Cohorts

vs. English Comparison Groups (Grade 4)

Subscales of Metropolitan Achievement Tests	Immersion Group Unadjusted Mean Score	Comparison Group Unadjusted Mean Score	F-Value[a]
COHORT I	(n=19)	(n=41)	
Word Knowledge (raw, max=50)	41.5	41.3	0.84
Reading (raw, max=45)	35.7	32.7	0.17
Language (raw, max=50)	34.7	34.4	1.61
Spelling (raw, max=40)	33.5	35.3	2.40
COHORT II	(n=34)	(n=26)	
Word Knowledge (raw, max=50)	39.1	40.8	2.65
Reading (raw, max=45)	33.3	31.0	0.33
Language (raw, max=50)	29.8	31.7	3.01
Spelling (raw, max=40)	32.8	35.3	3.60

[a]Based on Covariate Analysis using the first year's cognitive abilities test scores as covariate.

Table 5

Performance in French (Language Arts and Comprehension):

Comparisons between Immersion Cohorts (Grades 4 and 6)

	GRADE 4							GRADE 6						
	Cohort I			Cohort II				Cohort I			Cohort II			
	n	Mean Score	S.D.	n	Mean Score	S.D.	F-value[a]	n	Mean Score	S.D.	n	Mean Score	S.D.	F-value[a]
French Language Arts (max = 35/34)[b]	21	16.0	4.2	46	16.6	5.4	1.67[n.s.]	20	15.9	4.4	38	16.5	5.1	3.00[n.s.]
French Comprehension (max = 17)								20	9.4	2.1	34	11.4	3.7	9.21*

*$p < .01$

n.s. = Not Significant

[a]Analysis of covariance, first year's cognitive abilities test score as the covariate.

[b]Maximum score possible in grades 4 and 6, respectively.

Table 6

Design of the Bilingual Exchange Study

Instrument	Pre-testing	Post-testing	
		Before trip to Quebec	After trip to Quebec
Knowledge of French-Canadian Culture	Entire Group	Group A	Group B
Student Opinions Questionnaire	Entire Group	Group A	Group B

Table 7

Results of Pre/Post-Test Comparisons:
Group A (Cultural Lecture Component only)

	n	Group A Pretest Mean Score	Group A Pretest S.D.	Group A Posttest Mean Score	Group A Posttest S.D.	t-value
Student Opinions[a]	25					
Attitudes toward French-speaking Canadians (8 items)		2.27	0.38	2.24	0.36	0.34 n.s.
Attitudes toward English-speaking Canadians (5 items)		2.81	0.31	2.55	0.36	2.69**
Attitudes toward Bilingualism (6 items)		1.82	0.49	1.70	0.43	0.92 n.s.
Motivation to learn French (4 items)		1.68	0.50	1.81	0.61	0.81 n.s.
Anxiety about using French (4 items)		2.14	0.54	2.20	0.61	0.34 n.s.
Perceived understanding of French-Canadian culture (1 item)		2.64	0.70	2.36	0.57	1.55 n.s.
Knowledge of Canadian Culture	25					
French-Canadian (max=54)		13.80	5.20	17.92	5.23	2.79**
English-Canadian (max=54)		30.44	6.08	31.80	5.52	0.83 n.s.

n.s. = Not Significant
** = $p < .01$

[a]The Student Opinions Scales are based on a five-point scale with 1 as the positive end and 5 as the negative end. A lower score indicates more positive findings.

Table 8

Results of Pre/Post-Test Comparisons:
Group B (Entire Exchange Program)

	n	Group B Pretest Mean Score	S.D.	Group B Posttest Mean Score	S.D.	t-value
Student Opinions[a]	28					
Attitudes toward French-speaking Canadians (8 items)		2.32	0.46	2.03	0.39	2.54**
Attitudes toward English-speaking Canadians (5 items)		2.79	0.49	2.56	0.52	1.71 n.s.
Attitudes toward bilingualism (6 items)		1.84	0.51	1.67	0.49	1.24 n.s.
Motivation to learn French (4 items)		1.84	0.57	1.63	0.49	1.43 n.s.
Anxiety about speaking French (4 items)		2.23	0.67	2.14	0.70	0.52 n.s.
Perceived understanding of French-Canadian culture (1 item)		2.61	0.57	2.38	0.90	1.14 n.s.
Knowledge of Canadian Culture	29					
French-Canadian (max=54)		15.72	4.85	22.00	6.90	4.01***
English-Canadian (max=54)		29.76	7.36	28.69	8.09	0.53 n.s.

n.s. = Not Significant
** = $p < .01$
*** = $p < .001$

[a]The Student Opinions scales are based on a five-point scale with 1 as the positive end and 5 as the negative end. A lower score indicates more positive findings.

Table 9

Results of Pre and Post-test Comparisons: Group A vs. Group B
(Cultural-Lecture Component vs. Trip to Quebec)

	Group A Pretest Mean Raw Score	Group B Pretest Mean Raw Score	t-value	Group A Posttest Mean Raw Score	Group B Posttest Mean Raw Score	F-value[a]
Student Opinions[b]	(n=25)	(n=28)		(n=25)	(n=28)	
Attitudes toward French-speaking Canadians (8 items)	2.27	2.32	0.40 n.s.	2.24	2.03	5.38**
Attitudes toward English-speaking Canadians (5 items)	2.81	2.79	0.14 n.s.	2.55	2.56	0.00 n.s.
Attitudes toward bilingualism (6 items)	1.82	1.84	0.09 n.s.	1.70	1.67	0.12 n.s.
Motivation to learn French (4 items)	1.68	1.84	1.03 n.s.	1.81	1.63	2.82 n.s.
Anxiety about using French (4 items)	2.14	2.23	0.51 n.s.	2.20	2.14	0.42 n.s.
Perceived understanding of French-Canadian Culture (1 item)	2.64	2.61	0.19 n.s.	2.36	2.38	0.22 n.s.
Knowledge of Canadian Culture	(n=25)	(n=29)		(n=25)	(n=29)	
French-Canadian (max=54)	13.80	15.72	1.40 n.s.	17.92	22.00	3.74 n.s.
English-Canadian (max=54)	30.44	29.72	0.37 n.s.	31.80	28.69	3.21 n.s.

n.s. = Not Significant
** = $p < .01$

[a]Analysis of covariance of post-test means adjusting statistically for pre-test scores (i.e. covariate).

[b]The Student Opinions Scales are based on a five-point scale with 1 as the positive end and 5 as the negative end. A lower score indicates more positive findings.

Figure 1

Immersion Experience of

the Two Cohorts

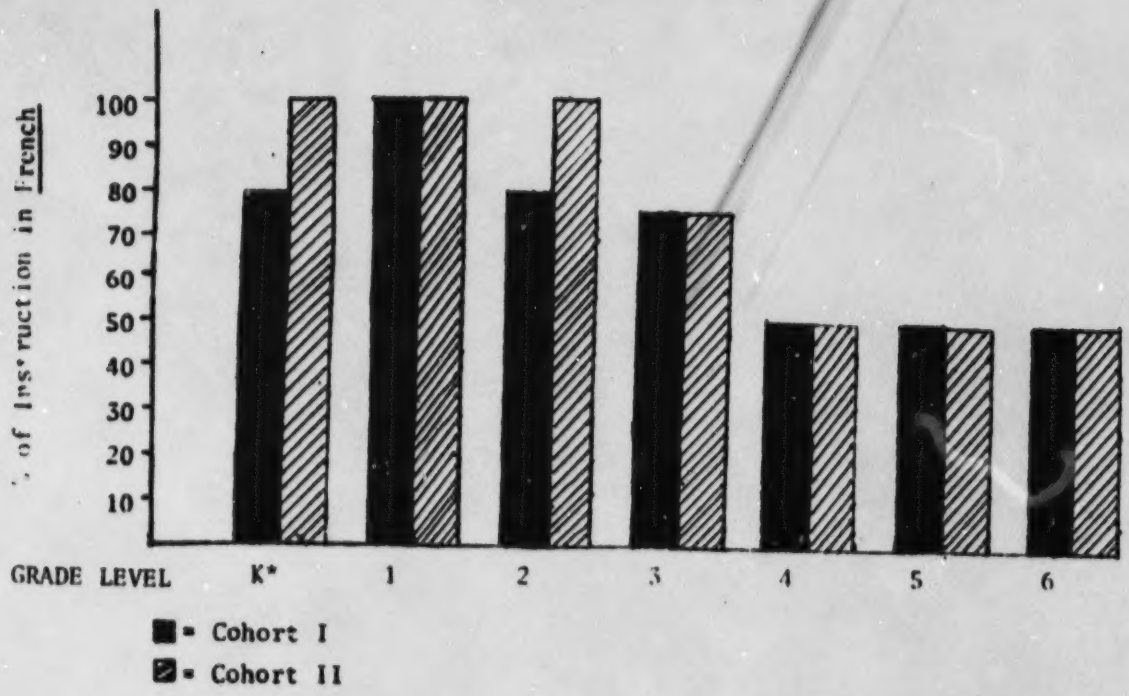
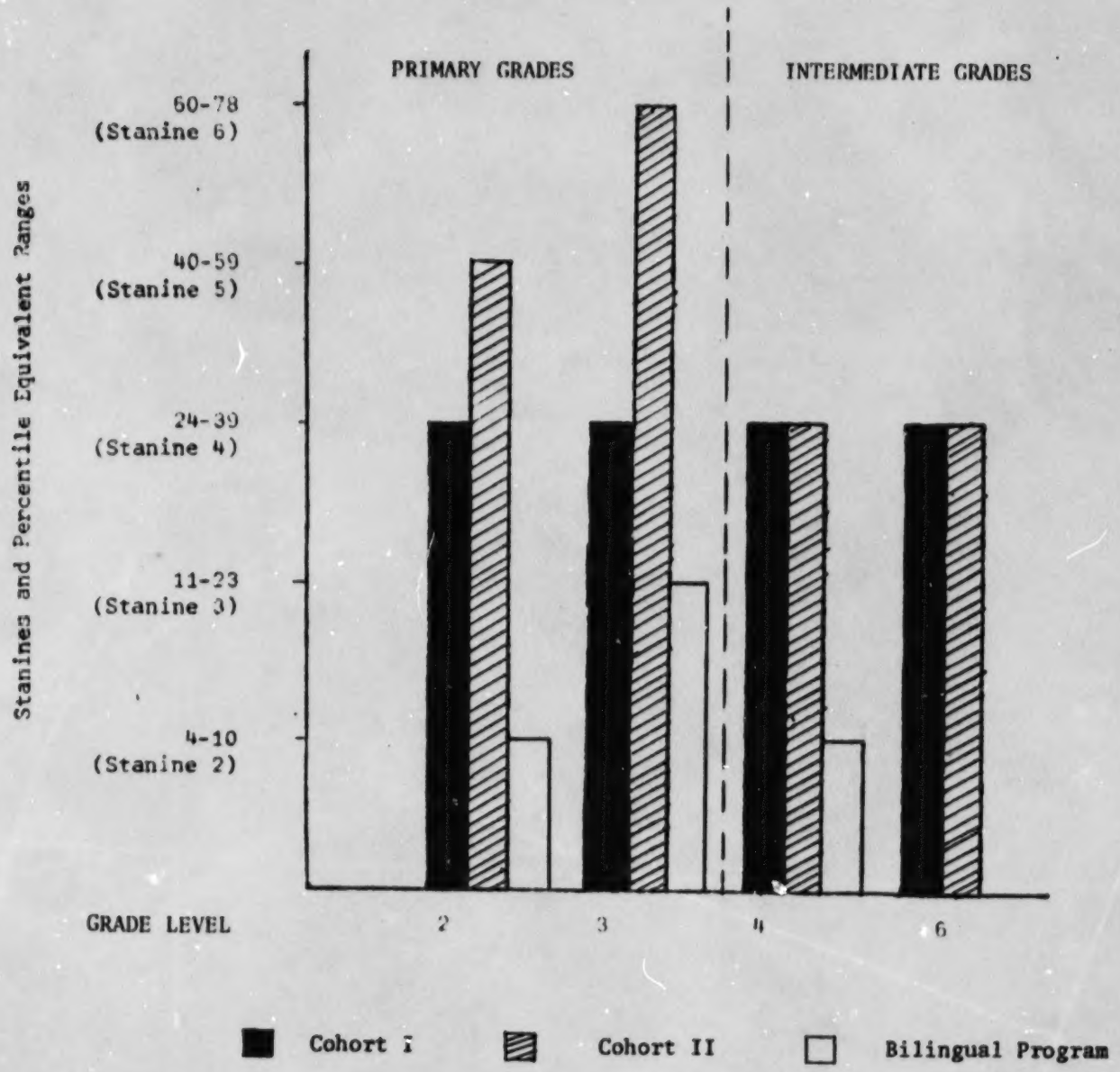


Figure 2

Performance of Cohort I and Cohort II on the
Test de Rendement en Français in Grades 2-6



APPENDIX A

Measurement Instruments

Instrument	Grade Administered
Canadian Cognitive Abilities Test (Thomas Nelson, Canada Ltd., 1970) -a group-administered test of general intelligence.	End of Kindergarten (Cohort II) Beginning Grade 1 (Cohort I)
Metropolitan Achievement Test (Harcourt, Brace, Jovanovich, 1970) -a group-administered series of standardized achievement tests in English which include the following subscales: word knowledge, reading comprehension, language and spelling.	Grades 1, 2, 3, 4
Test de Rendement en Francais (La Commission des Ecoles Catholiques, Montréal, Québec) -a series of standardized tests measuring achievement in French language arts through subtests in skills such as spelling, vocabulary, reading comprehension, sentence completion, and grammar. Stanine norms are available for Francophone children in Montreal.	Grades 2, 3, 4, and 6
Test de Compréhension Auditive (Level A) (Ontario Institute for Studies in Education, 1978) -a measure of French comprehension in "communicative situations". Students listen to passages from radio broadcasts (e.g., news, weather, interviews) and then answer multiple choice questions.	Grade 6